DATAPORT TROUBLE LOCATION

This Section provides trouble location features for ITT D448 multiplex terminals equipped with ITT D448 dataports. These procedures can be used to clear problems associated with private line digital data service channels.

Whenever this Section is reissued, the reasons for reissue will be listed in this paragraph.

The information contained in this Section applies only to dataport trouble location. For other trouble location procedures, refer to Sections ITTR-18-531, ITTR-18-532, ITTR-18-533, or ITTR-18-543.

Refer to Fig. 1 for typical system configurations. Note that this figure also illustrates the various loopback test modes which are used to isolate trouble on a private line digital data service channel. These loopback modes are:

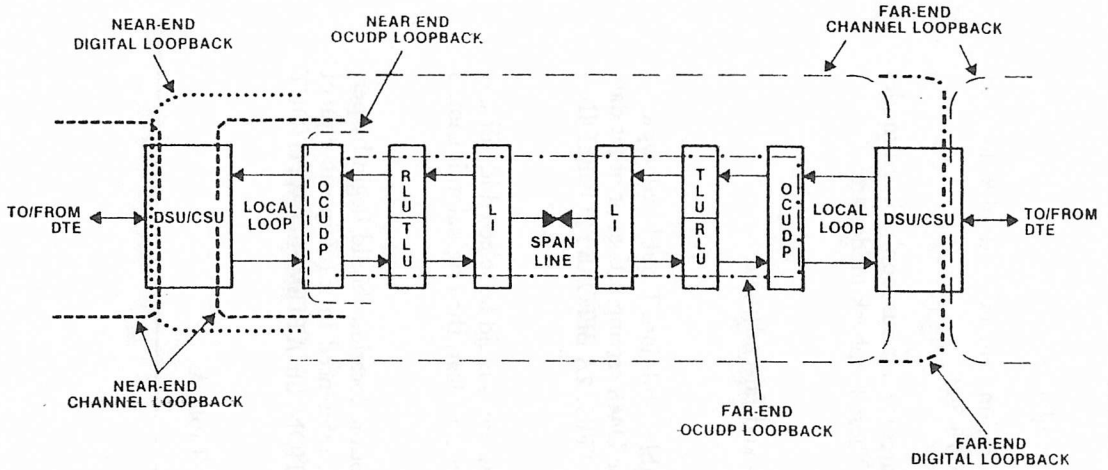
(a) OCUDP loopback (near- and far-end);
(b) Data Service Unit (DSU, digital, or remote terminal) loopback (near- and far-end); and
(c) Channel, or local line, loopback.

The procedures contained in this Section assume the presence only of a single trouble condition. Trouble will typically be reported by the end-user, who may experience data errors, no signal from the D448 serving office, or other data problems. Trouble location begins with the customer's trouble report. REFER TO FIG. 2A BEFORE PROCEEDING WITH ANY OTHER PROCEDURES IN THIS SECTION.

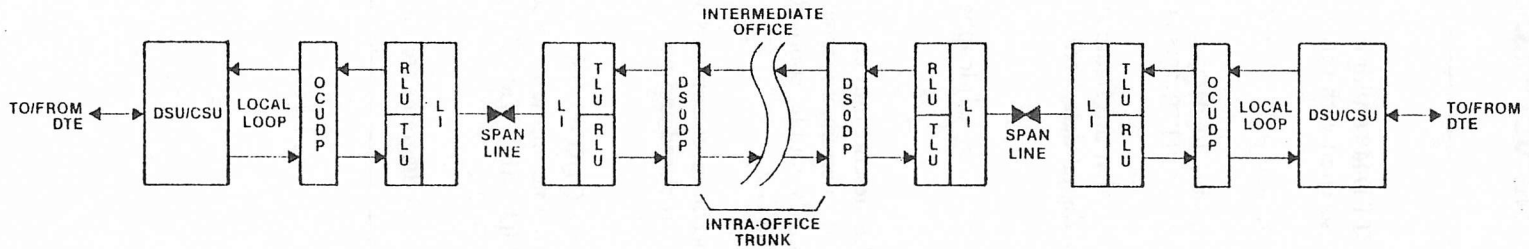
When replacing a unit during trouble location procedures, the options on the new unit should be selected identically to the options on the replaced unit. When a unit is replaced and the trouble does not clear, the original unit should be reinstalled in its position.

The trouble location procedures are presented in a GO/NO GO format. All trouble location should begin by performing the procedures in Fig. 2A; all detailed trouble location procedures are referenced in it (or in subsequent figures). UNDER NO CIRCUMSTANCES SHOULD ANY TROUBLE LOCATION BE ATTEMPED WITHOUT FIRST PERFORMING THE PROCEDURES IN FIG. 2A.

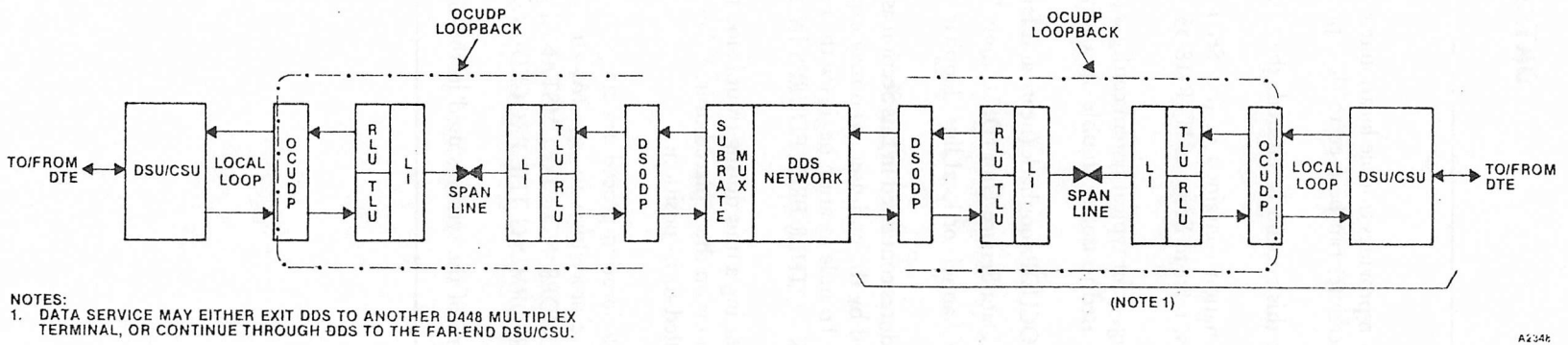
Descriptions of the symbols used in the GO/NO GO diagrams are provided in Table A.



(a) Stand-Alone Private Line Data Service-Subsystem Block Diagram



(b) Stand-Alone Private Line Data Service-Intra-Office Trunking Block Diagram



NOTES:
1. DATA SERVICE MAY EITHER EXIT DDS TO ANOTHER D448 MULTIPLEX TERMINAL, OR CONTINUE THROUGH DDS TO THE FAR-END DSU/CSU.

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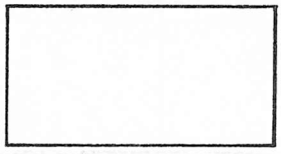
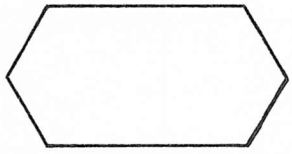
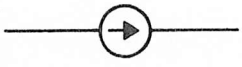
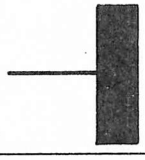
(c) Stand-Alone Private Line Data Service-DDS Access Block Diagram

Fig. 1—Typical System Configurations

TABLE A

SYMBOL DESCRIPTIONS

SYMBOL	NAME	DESCRIPTION
	Instruction Block	An instruction block is used to enclose a discrete statement. Each block has a reference number in brackets [ ]. This is for reference only and does not imply sequence.
	Decision Block	A decision block is used to enclose an interrogative statement. Each block has a reference number in brackets [ ]. This is for reference only and does not imply sequence. Each block normally has two responses (Yes-No); however, multiple responses are possible. For example, two "Yes" responses will be numbered Yes (1) and Yes (2). Always try the (1) response first. If the problem is not corrected, repeat the procedure with the (2) response.
	Reference Bubble	A reference bubble is used at the termination of a flowline to represent an exit from that figure or subfigure.
	AND Operation	The AND operation symbol is a junction point within a procedure. It indicates that each input (instruction) must be performed in the order given to accomplish the output.
	Flow-Through Operation	The flow-through operation symbol is used to graphically relate a single action to the expected result. The expected result can always be verified by observation. As long as the expected results are occurring, the user knows the procedure is progressing as it should.
	End-of-Procedure	The end-of-procedure symbol is used to denote that the flow-charted procedure, as defined by the procedure title, has been completed.

APPARATUS:

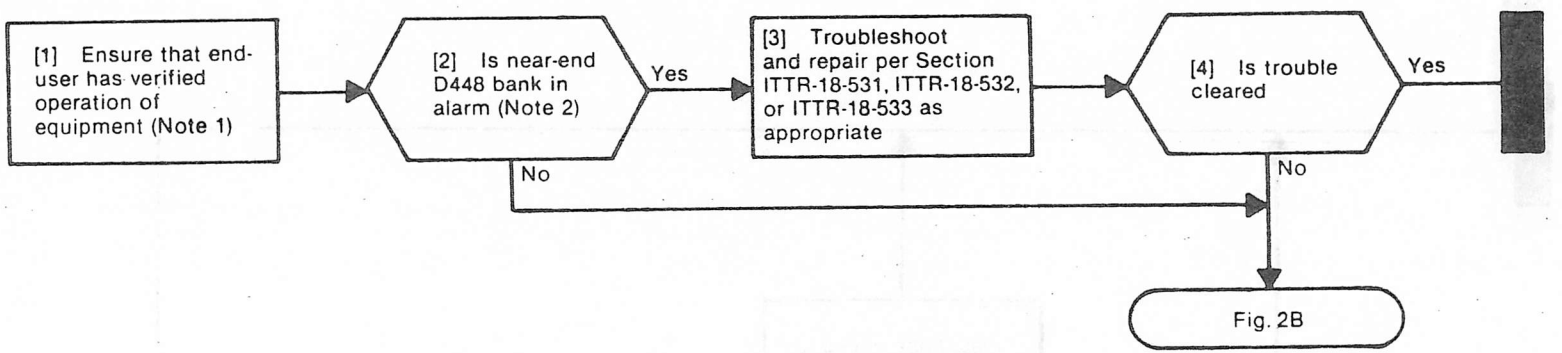
1—Data test set transmitter (ITT 628456-000-001, WE KS-20909 64.0 kb/s data transmitter, or equivalent)

1—Data test set receiver, (ITT 628457-000-001, WE KS-20908 64.0 kb/s data receiver, or equivalent)

1—Volt-ohm meter (VOM) (WE KS-14510, Triplett 630, or equivalent)

1—Date test interface (DTI), (ITT 628458-000-001)

CUSTOMER REPORTS TROUBLE AT NEAR-END STATION


[1] Ensure that end-user has verified operation of equipment (Note 1)
[2] Is near-end D448 bank in alarm (Note 2)
Yes
No
[3] Troubleshoot and repair per Section ITTR-18-531, ITTR-18-532, or ITTR-18-533 as appropriate
[4] Is trouble cleared
Yes
No
Fig. 2B

NOTES

1. If end-user had appropriate test equipment, or has data terminal equipment (DTE) capable of transmitting test signals, operation of near- and far-end DTE should be verified per DSU/CSU trouble location procedures.
2. The term "near-end" refers to the end where trouble was first reported.

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Fig. 2A—Dataport Trouble Location

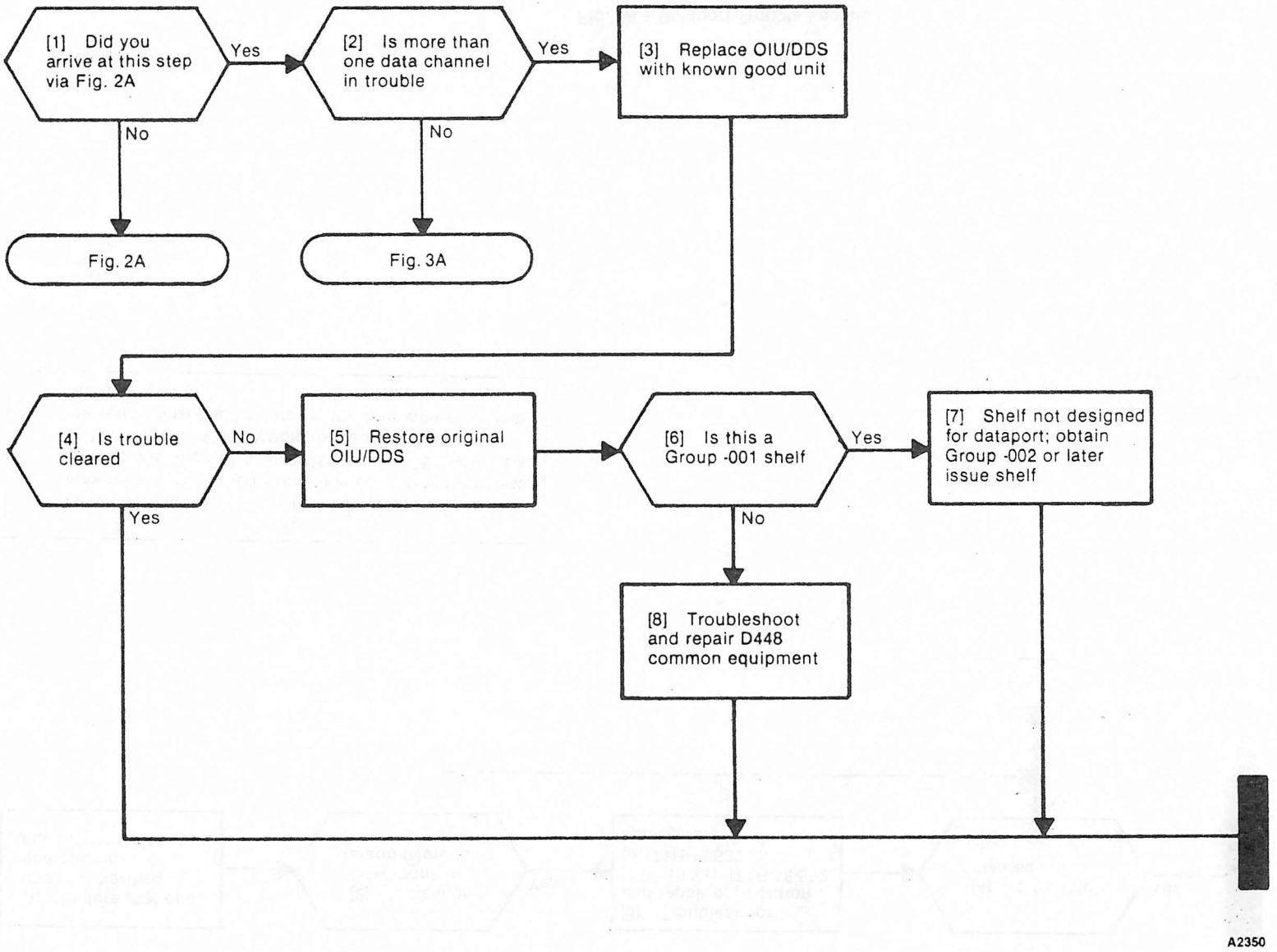
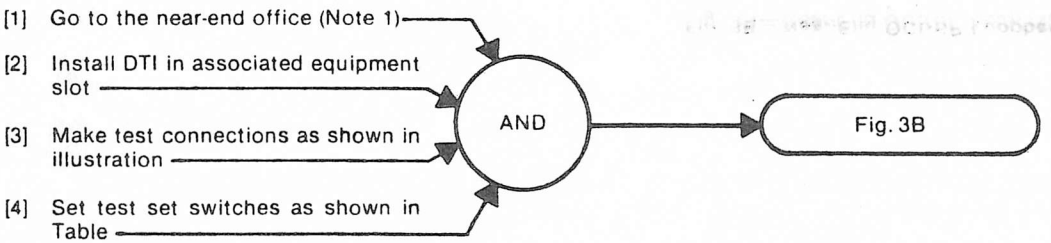
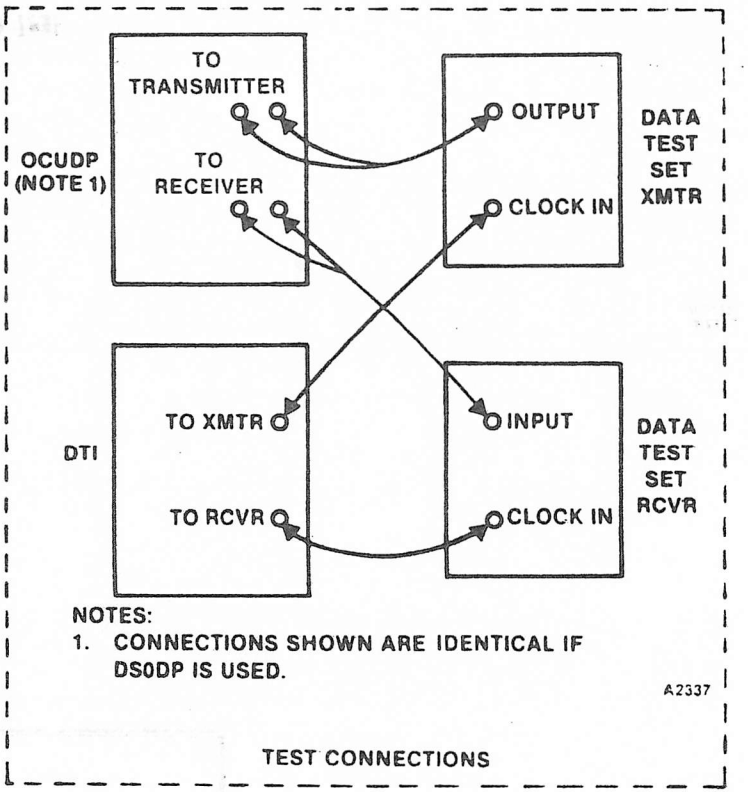


Fig. 2B—Dataport Trouble Location


[1] Go to the near-end office (Note 1)
[2] Install DTI in associated equipment slot
[3] Make test connections as shown in illustration
[4] Set test set switches as shown in Table
AND
Fig. 3B

NOTES

1. The term "near-end" refers to the office where trouble was first located.



TRANSMITTER		RECEIVER	
SWITCH	POSITION	SWITCH	POSITION
DATA RATE	Same as OCUDP	DATA RATE	Same as OCUDP
FUNCTION	LOOPBACK TEST	COUNTER	BIT ERRORS
MODE	REPEAT	TEST WORD	LOOPED
TRANSMITTER OUTPUT	NEAR LOGIC	CHANNEL	SINGLE
		RECEIVER INPUT	NEAR LOGIC

A2351

Fig. 3A—Near-End OCUDP Loopback Test

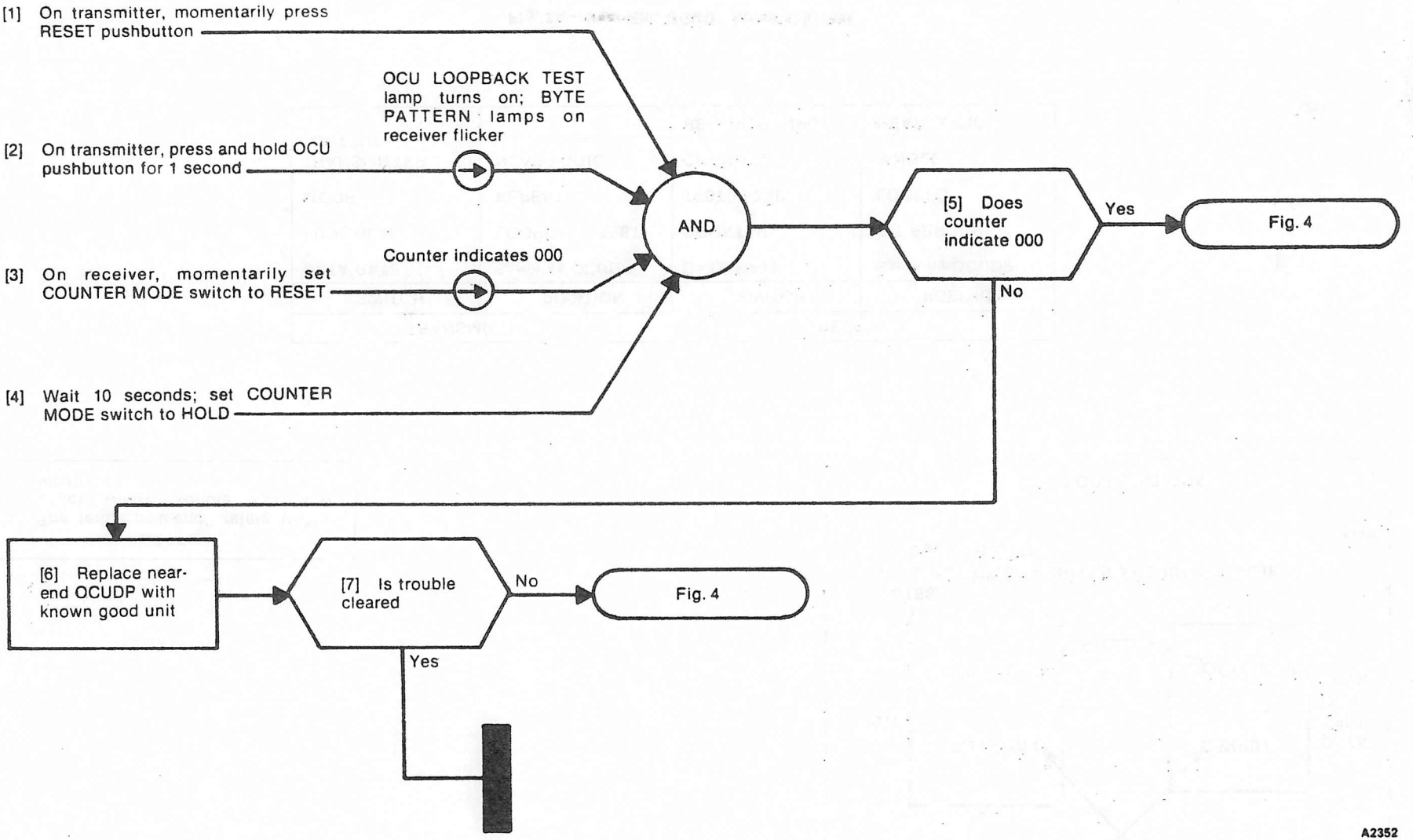
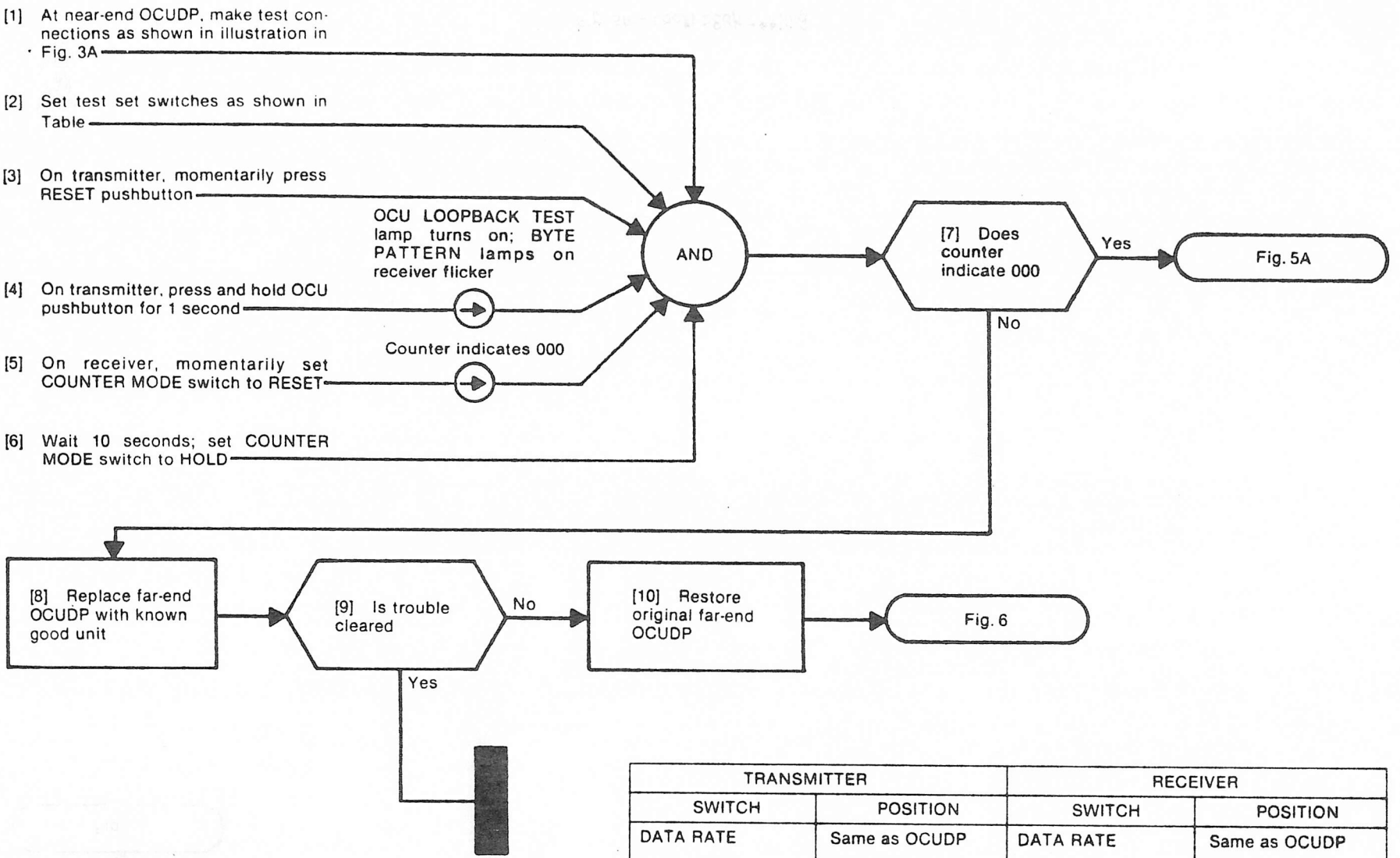

[1] On transmitter, momentarily press RESET pushbutton
OCU LOOPBACK TEST lamp turns on; BYTE PATTERN lamps on receiver flicker
[2] On transmitter, press and hold OCU pushbutton for 1 second
AND
[5] Does counter indicate 000
Yes
Fig. 4
Counter indicates 000
[3] On receiver, momentarily set COUNTER MODE switch to RESET
No
[4] Wait 10 seconds; set COUNTER MODE switch to HOLD
[6] Replace near-end OCUDP with known good unit
[7] Is trouble cleared
No
Fig. 4
Yes
A2352

Fig. 3B—Near-End OCUDP Loopback Test


[1] At near-end OCUDP, make test connections as shown in illustration in Fig. 3A
[2] Set test set switches as shown in Table
[3] On transmitter, momentarily press RESET pushbutton
OCU LOOPBACK TEST lamp turns on; BYTE PATTERN lamps on receiver flicker
AND
[4] On transmitter, press and hold OCU pushbutton for 1 second
Counter indicates 000
[5] On receiver, momentarily set COUNTER MODE switch to RESET
[6] Wait 10 seconds; set COUNTER MODE switch to HOLD
[7] Does counter indicate 000
Yes
Fig. 5A
No
[8] Replace far-end OCUDP with known good unit
[9] Is trouble cleared
No
[10] Restore original far-end OCUDP
Fig. 6
Yes

TRANSMITTER		RECEIVER	
SWITCH	POSITION	SWITCH	POSITION
DATA RATE	Same as OCUDP	DATA RATE	Same as OCUDP
FUNCTION	LOOPBACK TEST	COUNTER	BIT ERRORS
MODE	REPEAT	TEST WORD	LOOPED
TRANSMITTER OUTPUT	FAR LOGIC	CHANNEL	SINGLE
		RECEIVER INPUT	FAR LOGIC

A2353

Fig. 4—Far-End OCUDP Loopback Test

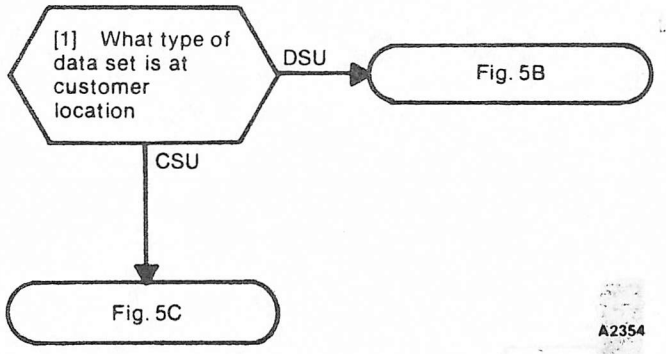
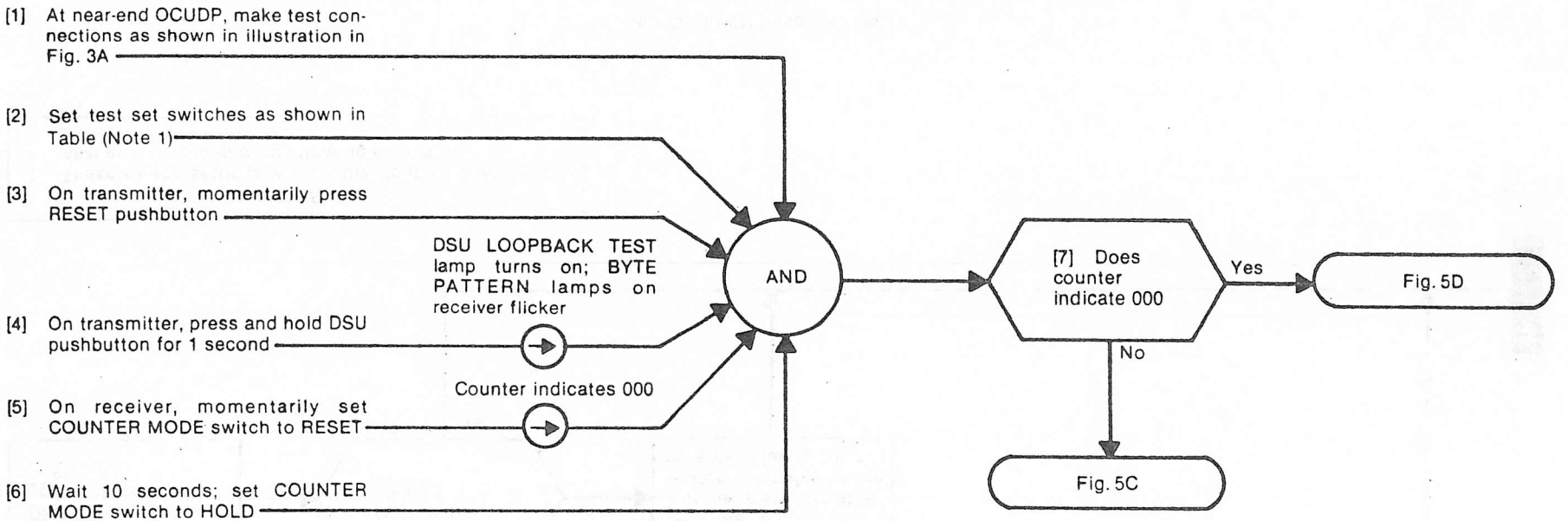


Fig. 5A—Local Loop Testing


[1] At near-end OCUDP, make test connections as shown in illustration in Fig. 3A
[2] Set test set switches as shown in Table (Note 1)
[3] On transmitter, momentarily press RESET pushbutton
[4] On transmitter, press and hold DSU pushbutton for 1 second
[5] On receiver, momentarily set COUNTER MODE switch to RESET
[6] Wait 10 seconds; set COUNTER MODE switch to HOLD
DSU LOOPBACK TEST lamp turns on; BYTE PATTERN lamps on receiver flicker
Counter indicates 000
AND
[7] Does counter indicate 000
Yes
Fig. 5D
No
Fig. 5C

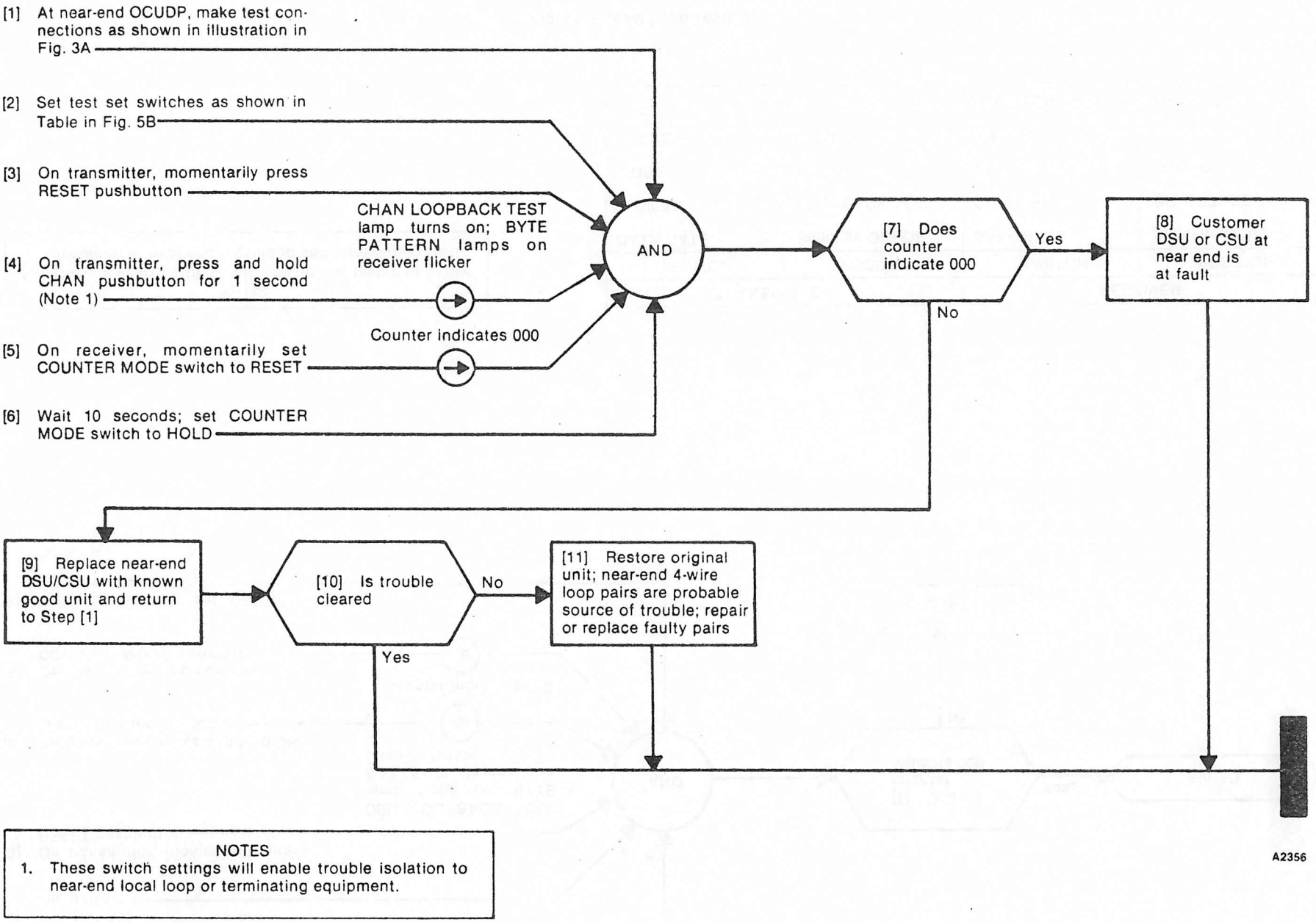
NOTES

1. These switch settings will enable the tester to verify operation of near-end local loop and terminating DSU.

TRANSMITTER		RECEIVER	
SWITCH	POSITION	SWITCH	POSITION
DATA RATE	Same as OCUDP	DATA RATE	Same as OCUDP
FUNCTION	LOOPBACK TEST	COUNTER	BIT ERRORS
MODE	REPEAT	TEST WORD	LOOPED
TRANSMITTER OUTPUT	NEAR LOGIC	CHANNEL	SINGLE
		RECEIVER INPUT	NEAR LOGIC

A2355

Fig. 5B—Local Loop Testing

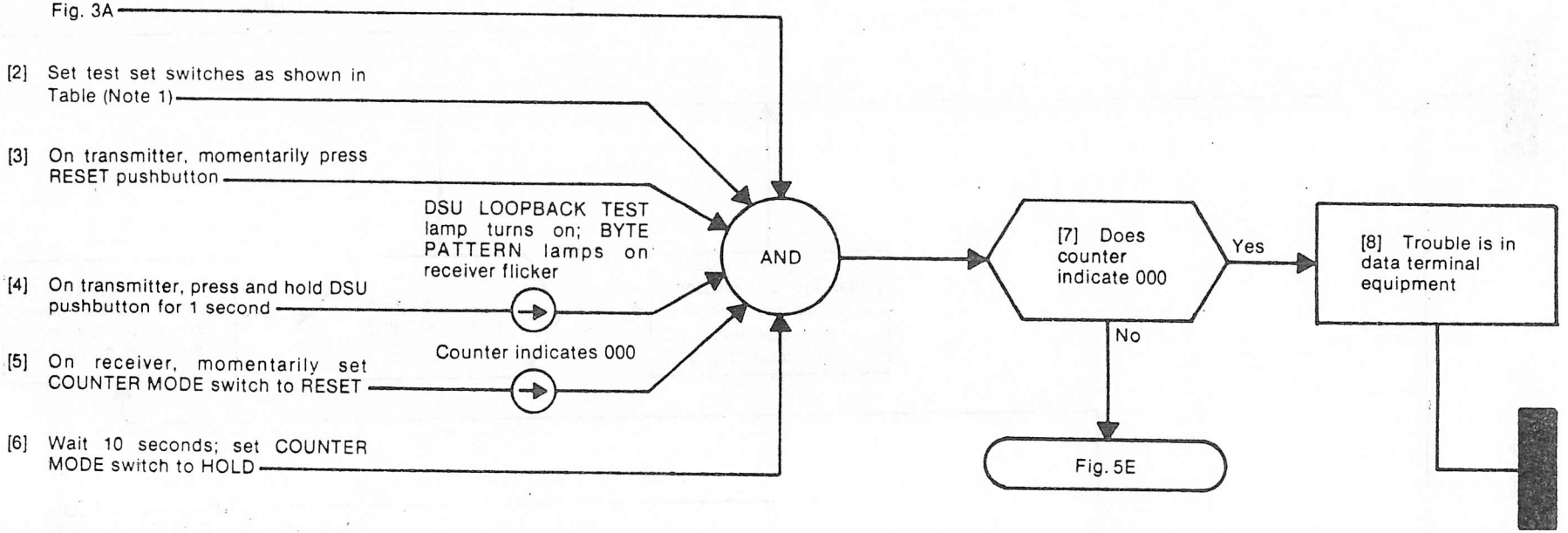

[1] At near-end OCUDP, make test connections as shown in illustration in Fig. 3A
[2] Set test set switches as shown in Table in Fig. 5B
[3] On transmitter, momentarily press RESET pushbutton
[4] On transmitter, press and hold CHAN pushbutton for 1 second (Note 1)
[5] On receiver, momentarily set COUNTER MODE switch to RESET
[6] Wait 10 seconds; set COUNTER MODE switch to HOLD
CHAN LOOPBACK TEST lamp turns on; BYTE PATTERN lamps on receiver flicker
Counter indicates 000
AND
[7] Does counter indicate 000
Yes
No
[8] Customer DSU or CSU at near end is at fault
[9] Replace near-end DSU/CSU with known good unit and return to Step [1]
[10] Is trouble cleared
No
Yes
[11] Restore original unit; near-end 4-wire loop pairs are probable source of trouble; repair or replace faulty pairs
A2356

NOTES
1. These switch settings will enable trouble isolation to near-end local loop or terminating equipment.

Fig. 5C—Local Loop Testing

ALERT

If CSU is far-end termination, proceed to Fig. 5E. These procedures will result in misleading test set indications if CSU is being used.


[1] At near-end OCUDP, make test connections as shown in illustration in Fig. 3A
[2] Set test set switches as shown in Table (Note 1)
[3] On transmitter, momentarily press RESET pushbutton
[4] On transmitter, press and hold DSU pushbutton for 1 second
[5] On receiver, momentarily set COUNTER MODE switch to RESET
[6] Wait 10 seconds; set COUNTER MODE switch to HOLD
DSU LOOPBACK TEST lamp turns on; BYTE PATTERN lamps on receiver flicker
Counter indicates 000
AND
[7] Does counter indicate 000
Yes
No
[8] Trouble is in data terminal equipment
Fig. 5E

NOTES

1. These switch settings will enable the tester to verify operation of far-end local loop and terminating DSU. If far-end equipment is a CSU, proceed to Fig. 5E.

TRANSMITTER		RECEIVER	
SWITCH	POSITION	SWITCH	POSITION
DATA RATE	Same as OCUDP	DATA RATE	Same as OCUDP
FUNCTION	LOOPBACK TEST	COUNTER	BIT ERRORS
MODE	REPEAT	TEST WORD	LOOPED
TRANSMITTER OUTPUT	FAR LOGIC	CHANNEL	SINGLE
		RECEIVER INPUT	FAR LOGIC

A2357

Fig. 5D—Local Loop Testing

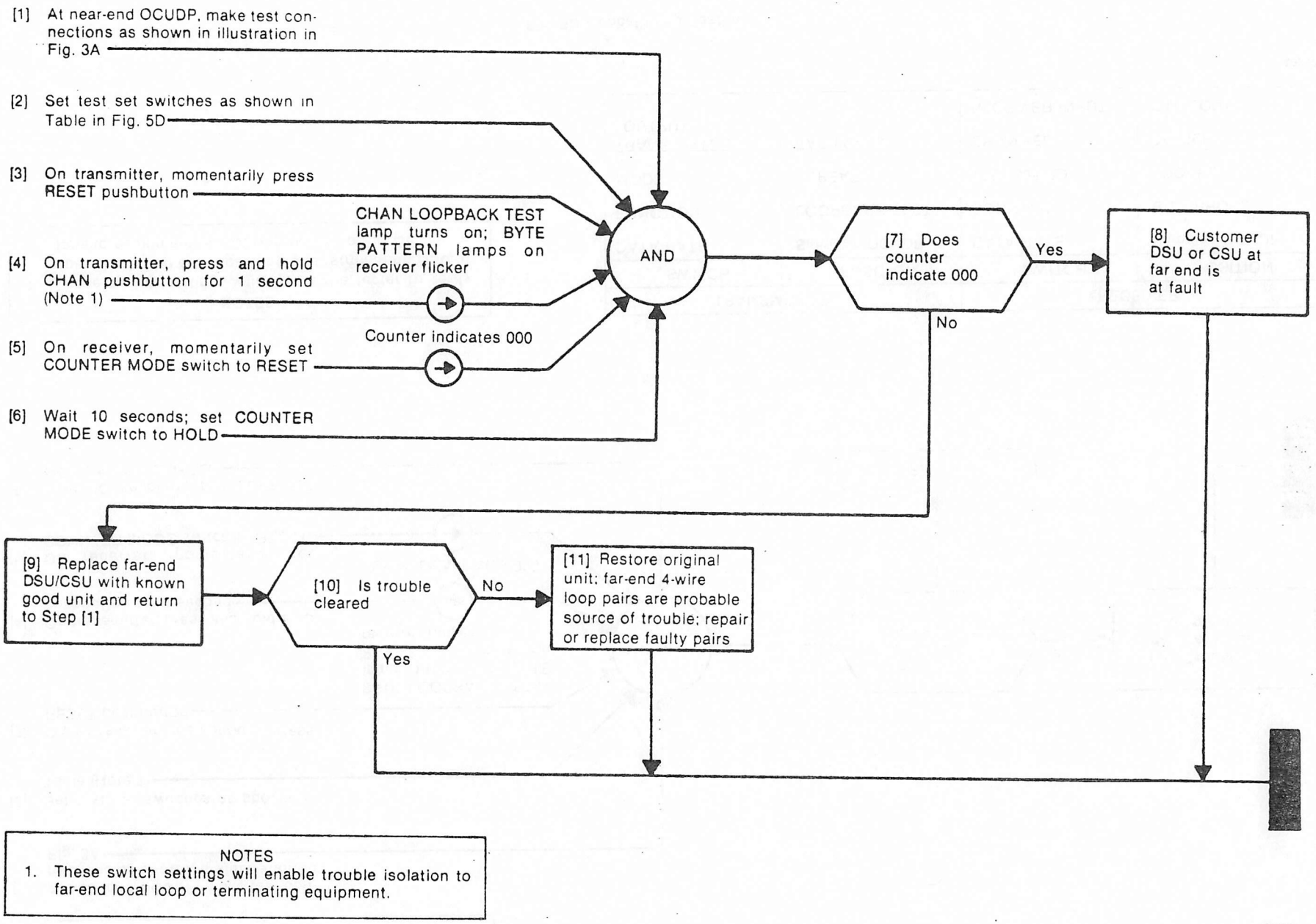

[1] At near-end OCUDP, make test connections as shown in illustration in Fig. 3A
[2] Set test set switches as shown in Table in Fig. 5D
[3] On transmitter, momentarily press RESET pushbutton
[4] On transmitter, press and hold CHAN pushbutton for 1 second (Note 1)
[5] On receiver, momentarily set COUNTER MODE switch to RESET
[6] Wait 10 seconds; set COUNTER MODE switch to HOLD
CHAN LOOPBACK TEST lamp turns on; BYTE PATTERN lamps on receiver flicker
Counter indicates 000
AND
[7] Does counter indicate 000
Yes
No
[8] Customer DSU or CSU at far end is at fault
[9] Replace far-end DSU/CSU with known good unit and return to Step [1]
[10] Is trouble cleared
No
Yes
[11] Restore original unit; far-end 4-wire loop pairs are probable source of trouble; repair or replace faulty pairs
NOTES
1. These switch settings will enable trouble isolation to far-end local loop or terminating equipment.
A2358

Fig. 5E—Local Loop Testing

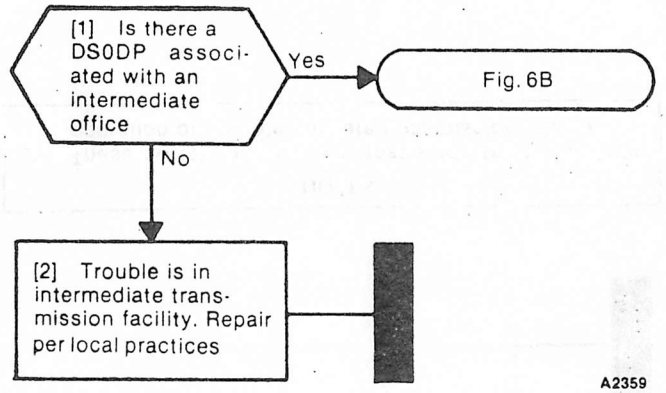
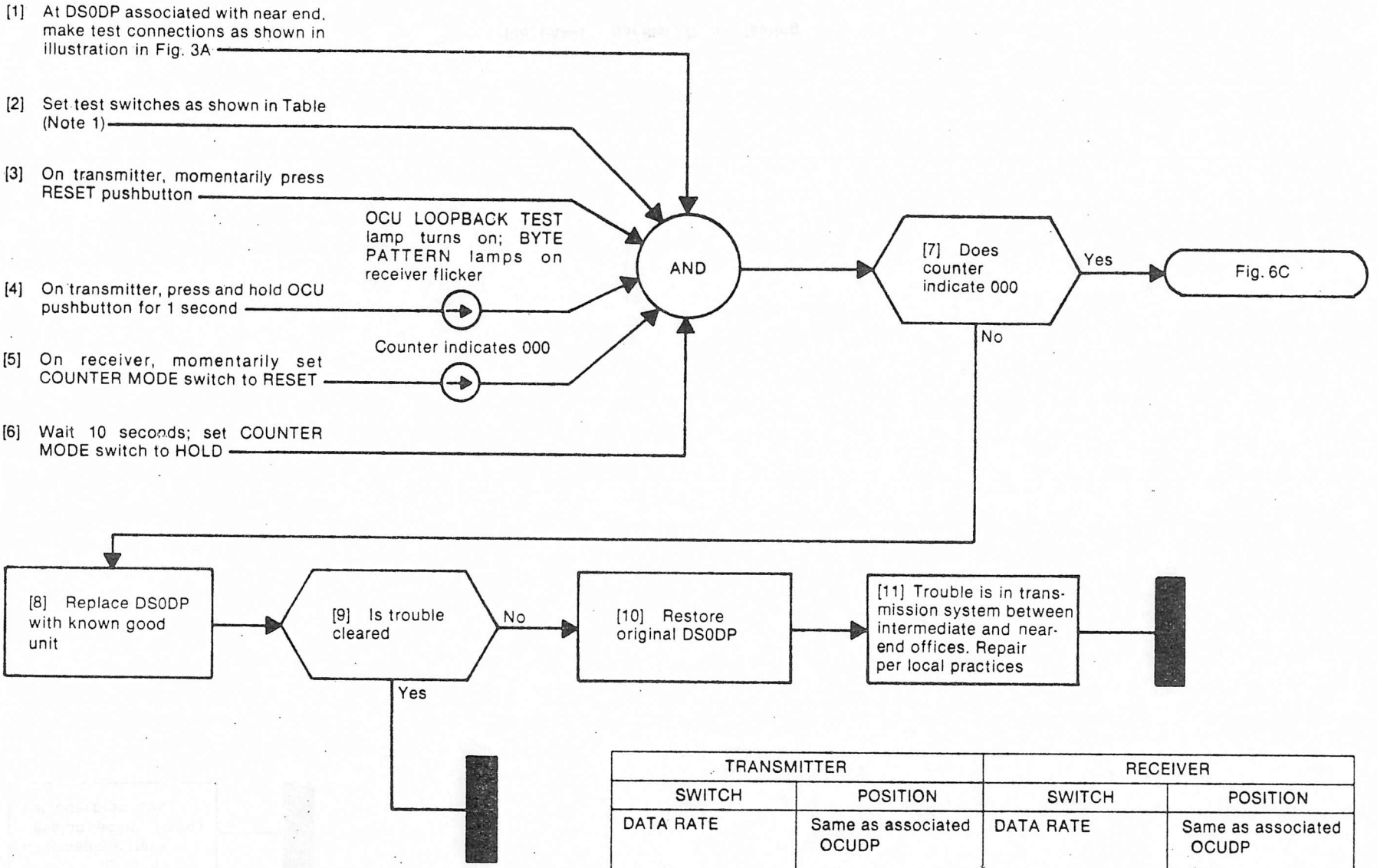

[1] Is there a DS0DP associated with an intermediate office
Yes
Fig. 6B
No
[2] Trouble is in intermediate transmission facility. Repair per local practices
A2359

Fig. 6A—Intermediate Office Testing


[1] At DS0DP associated with near end, make test connections as shown in illustration in Fig. 3A
[2] Set test switches as shown in Table (Note 1)
[3] On transmitter, momentarily press RESET pushbutton
[4] On transmitter, press and hold OCU pushbutton for 1 second
[5] On receiver, momentarily set COUNTER MODE switch to RESET
[6] Wait 10 seconds; set COUNTER MODE switch to HOLD
OCU LOOPBACK TEST lamp turns on; BYTE PATTERN lamps on receiver flicker
Counter indicates 000
AND
[7] Does counter indicate 000
Yes
Fig. 6C
No
[8] Replace DS0DP with known good unit
[9] Is trouble cleared
No
[10] Restore original DS0DP
[11] Trouble is in transmission system between intermediate and near-end offices. Repair per local practices
Yes

TRANSMITTER		RECEIVER	
SWITCH	POSITION	SWITCH	POSITION
DATA RATE	Same as associated OCUDP	DATA RATE	Same as associated OCUDP
FUNCTION	LOOPBACK TEST	COUNTER	BIT ERRORS
MODE	REPEAT	TEST WORD	LOOPED
TRANSMITTER OUTPUT	BIPOLAR	CHANNEL	SINGLE
		RECEIVER INPUT	BIPOLAR

NOTES

1. These switch settings will enable the tester to verify operation of the intermediate transmission facility.

A2360

Fig. 6B—Intermediate Office Testing

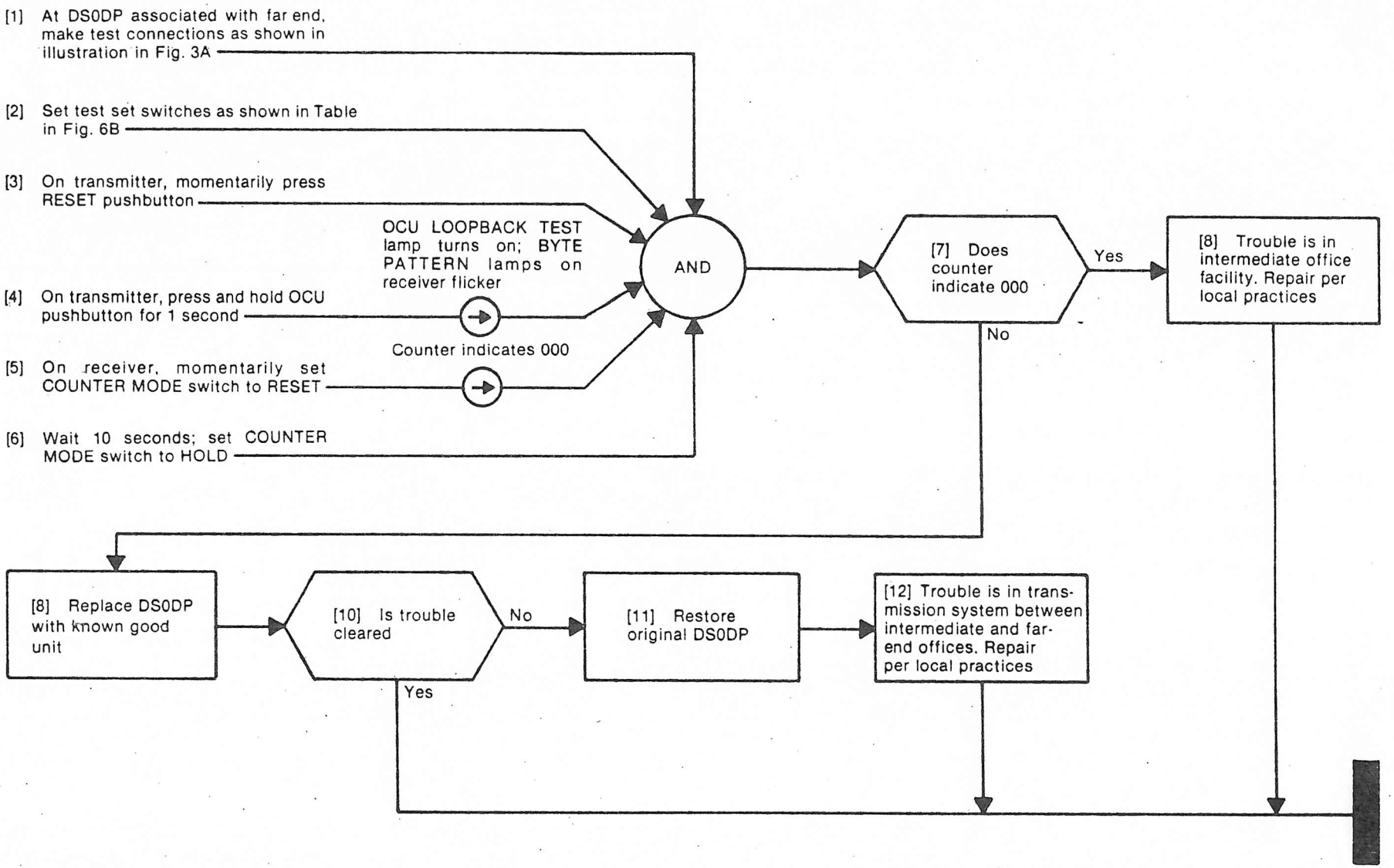

[1] At DS0DP associated with far end, make test connections as shown in illustration in Fig. 3A
[2] Set test set switches as shown in Table in Fig. 6B
[3] On transmitter, momentarily press RESET pushbutton
OCU LOOPBACK TEST lamp turns on; BYTE PATTERN lamps on receiver flicker
AND
[4] On transmitter, press and hold OCU pushbutton for 1 second
Counter indicates 000
[5] On receiver, momentarily set COUNTER MODE switch to RESET
[6] Wait 10 seconds; set COUNTER MODE switch to HOLD
[7] Does counter indicate 000
Yes
[8] Trouble is in intermediate office facility. Repair per local practices
No
[8] Replace DS0DP with known good unit
[10] Is trouble cleared
No
[11] Restore original DS0DP
[12] Trouble is in transmission system between intermediate and far-end offices. Repair per local practices
Yes
A2361

Fig. 6C—Intermediate Office Testing